

Remarks

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make a number of editorial revisions. A substitute specification and abstract have been prepared and are submitted herewith. No new matter has been added.

In addition, claims 1, 6 and 9-11 have been amended to make a number of editorial revisions. These revisions have been made to place the claims in better U.S. form. None of these amendments have been made to narrow the scope of protection of the claims, nor to address issues related to patentability and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

Withdrawn claims 2-5, 7 and 12-19 have been cancelled without prejudice or disclaimer to the subject matter contained therein.

The Information Disclosure Statement (IDS) originally filed on June 28, 2001 has been indicated as failing to comply with 37 CFR 1.98(a)(2). However, it is noted that the IDS was originally submitted with a copy of each of the references listed thereon. Enclosed herewith is a date-stamped postcard receipt as evidence of such submission. As a result, consideration of the IDS is respectfully requested. Also enclosed herewith are copies of the IDS, form PTO-1449, and references listed thereon all originally submitted on June 28, 2001.

Claims 1, 6 and 10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Seto (US 2003/0035183) in view of Franco (US 2004/0190911). Claim 8 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Seto in view of Franco and further in view of Way (US 6,525,857). Claim 9 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Seto in view of Franco and further in view of Ooi (US 6,362,913).

The above-mentioned rejections are respectfully traversed and submitted to be inapplicable to the pending claims for the following reasons.

Claim 1 is patentable over the combination of Seto and Franco, since claim 1 recites an optical transmission system including, in part, an external modulation portion

for intensity-modulating an optical signal obtained by conversion in an electrical-optical conversion portion using a predetermined local oscillation signal outputted from a local oscillation signal source. The combination of Seto and Franco fails to disclose or suggest the external modulation portion of claim 1.

Seto discloses an optical communication system including a transmitting/receiving station 10B connected to a number of transmitting/receiving devices 32B-1-32B-P by an optical fiber 30. The station 10B includes modulators 12-1-12-P, frequency converters 88-1-88-P, pilot carrier generators 14-1 and 14-2, an adder 16 and an electrical/optical converter 18. The modulators 12-1-12-P output signals modulated with data input thereto to the frequency converters 88-1-88-P, respectively. The frequency converters 88-1-88-P frequency convert the modulated input signals and output the frequency converted signals to the adder 16. The adder 16 adds the frequency converted signals together with pilot carrier signals f_{LO1} and f_{LO2} from the pilot carrier generators 14-1 and 14-2 and outputs a synthesized signal to the converter 18. The converter 18 outputs a laser beam optically modulated in accordance with the synthesized signal to an optical divider 34 for transmission to the devices 32B-1-32B-P via the optical fiber 30. (See page 13, paragraphs [0196] – [0206] and Figure 15).

As indicated in the rejection, Seto fails to disclose or suggest the external modulation portion for intensity-modulating an optical signal obtained by conversion in an electrical-optical conversion portion using a predetermined local oscillation signal outputted from a local oscillation signal source as recited in claim 1. Therefore, the rejection relies on Franco as disclosing this feature.

Franco discloses a transmission apparatus including a laser 1, a first amplitude modulator 2 and a second amplitude modulator 12. The first amplitude modulator 2 is driven by a composite electrical signal including a first periodic electrical signal 4, a second periodic electrical signal 5 at the second harmonic of the first periodic electrical signal 4, and a third periodic electrical signal 6 at a higher harmonic of the first periodic electrical signal 4, and emits a pulsed modulated optical signal to the second amplitude modulator 12. The second amplitude modulator 12 is driven by an electrical signal 13 containing the data to be transmitted and emits a pulsed transmission signal to transmit the data. (See page 4, paragraph [0086] – [0097] and Figure 1).

In the rejection, it is indicated that it would have been obvious to one of ordinary skill in the art to add the second amplitude modulator 12 of Franco to the optical communication system of Seto. The rejection indicates that the rationale for making this combination is the suppression of transmission distance limiting chirp that is generated by directly modulating a laser. However, this combination is submitted to be improper for the following reasons.

Initially, it is noted that the first amplitude modulator 2 of Franco is different from the converter 18 of Seto in that the first amplitude modulator 2 is driven by a composite electrical signal including a first periodic electrical signal and multiple harmonics thereof, while the converter 18 outputs an intensity-modulated optical signal for transmission. Therefore, it would not have been obvious to include the second amplitude modulator 12 of Franco after the converter 18 in the system of Seto, since the signal output from the converter 18 is different from the signal output from the first amplitude modulator 2. As a result, combining the second amplitude modulator 12 of Franco with the system of Seto would render the system of Seto inoperative.

Further, Seto is directed to a system for electrically frequency-converting a frequency multiplexed signal after optical transmission. On the other hand, Franco discloses an apparatus that performs wave-shaping using two amplitude modulators. As a result, it is submitted that the references represent non-analogous art and cannot be combined in the manner relied upon in the rejection.

For the above-mentioned reasons, it is submitted that Franco and Seto cannot be combined in a fashion that would render claim 1 obvious.

As for Way and Ooi, they are relied upon as disclosing a modulator that produces a single sideband signal and characteristics of a Mach-Zehner type modulator, respectively. However, neither of these references discloses or suggests the above-discussed features of claim 1.

Because of the above-mentioned distinctions, it is believed clear that claims 1, 6 and 8-11 are allowable over the references relied upon in the above-mentioned rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise

render obvious, the present invention as recited in claims 1, 6 and 8-11. Therefore, it is submitted that claims 1, 6 and 8-11 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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